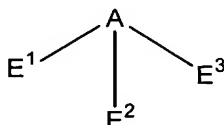


This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Previously Presented) A polypodal chelant having the formula:



and pharmaceutically acceptable salts thereof, wherein

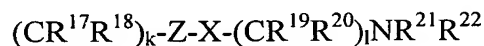
A is a spacer selected from the group consisting of R¹-C, R¹-Si, R¹-Ge, N, P and P(O),

R¹ is independently selected at each occurrence from the group consisting of H, C₁-C₆ alkyl,

C₃-C₆ cycloalkyl, C₁-C₆ fluoroalkyl, C₁-C₆ alkenyl, C₃-C₆ cycloalkenyl, C₁-C₆

fluoroalkenyl, benzyl, fluorobenzyl, phenyl and fluorophenyl;

E¹, E², and E³ are chelating arms each independently having the formula:



wherein

k is an integer selected from 0 to 3, provided that when A is N, k is 1-3;

l is an integer selected from 1 to 3;

Z is selected from the group consisting of a bond, O, NH, NR¹NR¹, ONH and

N(OR¹);

X is selected from the group consisting of C(O), S(O)₂ and P(O)(OR¹);

R¹⁷, R¹⁸, R¹⁹, R²⁰, R²¹ and R²² are independently selected from the group consisting of

H, C₁-C₁₀ alkyl substituted with 0-5 R²³, C₁-C₁₀ fluoroalkyl substituted with 0-

5 R²³, C₂-C₁₀ alkenyl substituted with 0-5 R²³, C₂-C₁₀ fluoroalkenyl substituted

with 0-5 R²³, aryl substituted with 0-5 R²³, C₇-C₁₆ alkaryl wherein the aryl is

substituted with 0-5 R^{23} , and fluoroaryl substituted with 0-5 R^{23} ; or R^{17} and R^{18} , R^{19} and R^{20} or R^{21} and R^{22} may be taken together to form a C_3 - C_{10} cycloalkyl or C_3 - C_{10} cycloalkenyl optionally interrupted with $C(O)NH$, NH , $NHC(O)$, $NHC(O)NH$, $NHC(S)NH$, O , S , $S(O)$, $S(O)_2$, $P(O)(OR^{24})$, $P(O)(OR^{24})O$ or $P(O)(NHR^{24})O$, or to form a $=CH-R^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ;

R^{23} is selected from the group consisting of H , OH , C_1 - C_3 alkyl, C_1 - C_3 hydroxyalkyl,

$C(=O)R^{24}$, $C(=O)OR^{24}$, $C(=O)NR^{24}_2$, $PO(OR^{24})_2$ and $S(O)_2OR^{24}$; and

R^{24} is selected from the group consisting of H , C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6

fluoroalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkyl, C_1 - C_6 fluoroalkenyl, benzyl,

fluorobenzyl, phenyl, and fluorophenyl,

with the proviso that when A is CH_3-C and E^1 is $CH_2-NH-C(O)-C(CH_3)_2-NH_2$, at least one of E^2 or E^3 is other than $CH_2-NH-C(O)-C(CH_3)_2-NH_2$.

2. (Canceled)

3. (Original) A polypodal chelant according to claim 1, characterized by being tripodal.

4. (Previously Presented) A tripodal chelant according to claim 3, wherein A is a spacer selected from the group consisting of R^1-C , N , P , and $P(O)$; R^1 is selected from the group consisting of H , C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkyl, benzyl, and phenyl; E^1 , E^2 , and E^3 are chelating arms each independently having the formula:



R^{21} and R^{22} are independently selected at each occurrence from the group consisting of H, $\text{C}_1\text{-C}_{10}$ alkyl substituted with 0-2 R^{23} , $\text{C}_2\text{-C}_{10}$ alkenyl substituted with 0-2 R^{23} , aryl substituted with 0-2 R^{23} , and $\text{C}_7\text{-C}_{16}$ alkaryl, wherein the aryl is substituted with 0-2 R^{23} , or R^{21} and R^{22} may be taken together to form a $=\text{CH-R}^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ;

R^{23} is selected from the group consisting of H, OH, $\text{C}_1\text{-C}_3$ alkyl, $\text{C}_1\text{-C}_3$ hydroxyalkyl,

$\text{C}(=\text{O})\text{R}^{24}$, $\text{C}(=\text{O})\text{OR}^{24}$, $\text{C}(=\text{O})\text{NR}^{24}_2$, $\text{PO}(\text{OR}^{24})_2$ and $\text{S}(\text{O})_2\text{OR}^{24}$; and

R^{24} is selected from the group consisting of H, $\text{C}_1\text{-C}_6$ alkyl, $\text{C}_3\text{-C}_6$ cycloalkyl, $\text{C}_1\text{-C}_6$ fluoroalkyl, $\text{C}_1\text{-C}_6$ alkenyl, $\text{C}_3\text{-C}_6$ cycloalkyl, benzyl and phenyl.

5. (Previously Presented) A tripodal chelant according to claim 4, wherein A is a spacer selected from the group consisting of N and $\text{P}(\text{O})$; E^1 , E^2 , and E^3 are chelating arms each independently having the formula:



wherein R^{21} and R^{22} are independently selected from the group consisting of $\text{C}_1\text{-C}_{10}$ alkyl substituted with 0-2 R^{23} , and aryl substituted with 0-2 R^{23} , or R^{21} and R^{22} may be taken together to form a $=\text{CH-R}^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ; R^{23} is selected from the group consisting of OH, $\text{C}_1\text{-C}_3$ hydroxyalkyl, COOH, $\text{PO}(\text{OH})_2$ and $\text{S}(\text{O})_2\text{OH}$.

6. (Original) A tripodal chelant according to claim 5, wherein A is a spacer selected from the group consisting of N, and P(O); E¹, E² and E³ are chelating arms each independently having the formula:



wherein k is 2-3; R²¹ is independently selected from the group consisting of CH₃, CH₂COOH, and CH₂PO(OH)₂; and R²² is independently selected from the group consisting of CH₂COOH, and CH₂PO(OH)₂.

7. (Original) A tripodal chelant according to claim 6, wherein A is N or P(O); E¹, E², and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂, and k is 2-3.

8. (Original) A tripodal chelant according to claim 7, wherein A is N; E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂, and k is 2-3.

9. (Original) A tripodal chelant according to claim 7, wherein A is N; E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₃)(CH₂COOH), and k is 2-3.

10-14. (Canceled)

15. (Original) A radiopharmaceutical compound comprising a polypodal chelant according to claim 1, chelated with a radionuclide selected from the group consisting of ^{52m}Mn, ⁵²Fe, ⁵⁵Co, ⁶⁴Cu, ⁶⁷Cu, ⁶⁷Ga, ⁶⁸Ga, ⁹⁰Y, ^{94m}Tc, ^{99m}Tc, ¹⁰⁵Rh, ¹⁰⁹Pd, ¹¹¹In, ^{117m}Sn, ¹⁴⁹Pr, ¹⁵³Sm, ¹⁵⁹Gd, ¹⁶⁶Ho, ¹⁶⁹Yb, ¹⁷⁷Lu, ¹⁸⁶Re, ¹⁸⁸Re, ²⁰³Pb, ²¹¹Pb, and ²¹²Bi.

16. (Canceled)

17. (Original) The radiopharmaceutical compound according to claim 15, wherein said polypodal chelant is characterized by being tripodal.

18. (Previously Presented) The radiopharmaceutical compound according to claim 17, wherein A of said tripodal chelant is a spacer selected from the group consisting of R^1 -C, N, P, and P(O); R^1 is selected from the group consisting of H, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkyl, benzyl, and phenyl; E^1 , E^2 , and E^3 are chelating arms each independently having the formula:



R^{21} and R^{22} are independently selected at each occurrence from the group consisting of H, C_1 - C_{10} alkyl substituted with 0-2 R^{23} , C_2 - C_{10} alkenyl substituted with 0-2 R^{23} , aryl substituted with 0-2 R^{23} , and C_7 - C_{16} alkaryl, wherein the aryl is substituted with 0-2 R^{23} , or R^{21} and R^{22} may be taken together to form a $=CH-R^{22a}$ -group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ;

R^{23} is selected from the group consisting of H, OH, C_1 - C_3 alkyl, C_1 - C_3 hydroxyalkyl, $C(=O)R^{24}$, $C(=O)OR^{24}$, $C(=O)NR^{24}_2$, $PO(OR^{24})_2$ and $S(O)_2OR^{24}$; and

R^{24} is selected from the group consisting of H, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6 fluoroalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkyl, benzyl and phenyl.

19. (Previously Presented) The radiopharmaceutical compound according to claim 18, wherein A is a spacer selected from the group consisting of N and P(O); E¹, E², and E³ are chelating arms each independently having the formula:



wherein R²¹ and R²² are independently selected from the group consisting of C₁-C₁₀ alkyl substituted with 0-2 R²³, and aryl substituted with 0-2 R²³, or R²¹ and R²² may be taken together to form a =CH-R^{22a} group, wherein R^{22a} is aryl substituted with 0-5 R²³, or heterocycle substituted by 0-5 R²³; R²³ is selected from the group consisting of OH, C₁-C₃ hydroxyalkyl, COOH, PO(OH)₂ and S(O)₂OH.

20. (Original) The radiopharmaceutical compound according to claim 19, wherein A is N or P(O); E¹, E² and E³ are chelating arms each independently having the formula:



wherein k is 2-3; R²¹ is independently selected from the group consisting of CH₃, CH₂COOH, and CH₂PO(OH)₂; and R²² is independently selected from the group consisting of CH₂COOH, and CH₂PO(OH)₂.

21. (Original) The radiopharmaceutical compound according to claim 20, wherein A is N or P(O); k is 2-3; and E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂.

22. (Original) The radiopharmaceutical compound according to claim 21, wherein A is N; E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂, and k is 2-3.

23-26. (Canceled)

27. (Original) An MRI contrast agent comprising a polypodal chelant according to claim 1, chelated with a paramagnetic metal ion of atomic number 21-29, 42-44 or 58-70.

28. (Canceled)

29. (Previously Presented) The MRI contrast agent according to claim 27, wherein said polypodal chelant is characterized by being tripodal.

30. (Previously Presented) The MRI contrast agent according to claim 29, wherein A of said tripodal chelant is a spacer selected from the group consisting of R¹-C, N, P, and P(O); R¹ is selected from the group consisting of H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₆ alkenyl, C₃-C₆ cycloalkyl, benzyl, and phenyl; E¹, E², and E³ are chelating arms each independently having the formula:



R²¹ and R²² are independently selected at each occurrence from the group consisting of H, C₁-C₁₀ alkyl substituted with 0-2 R²³, C₂-C₁₀ alkenyl substituted with 0-2 R²³, aryl substituted with 0-2 R²³, and C₇-C₁₆ alkaryl, wherein the aryl is substituted with 0-2 R²³, or R²¹ and R²² may be taken together to form a =CH-R^{22a} group, wherein R^{22a} is aryl substituted with 0-5 R²³, or heterocycle substituted by 0-5 R²³;

R²³ is selected from the group consisting of H, OH, C₁-C₃ alkyl, C₁-C₃ hydroxyalkyl, C(=O)R²⁴, C(=O)OR²⁴, C(=O)NR²⁴₂, PO(OR²⁴)₂ and S(O)₂OR²⁴; and

R²⁴ is selected from the group consisting of H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₆ fluoroalkyl, C₁-C₆ alkenyl, C₃-C₆ cycloalkyl, benzyl and phenyl. .

31. (Previously Presented) The MRI contrast agent according to claim 30, wherein A is a spacer selected from the group consisting of N and P(O); E¹, E², and E³ are chelating arms each independently having the formula:



wherein R²¹ and R²² are independently selected from the group consisting of C₁-C₁₀ alkyl substituted with 0-2 R²³, and aryl substituted with 0-2 R²³, or R²¹ and R²² may be taken together to form a =CH-R^{22a} group, wherein R^{22a} is aryl substituted with 0-5 R²³, or heterocycle substituted by 0-5 R²³; R²³ is selected from the group consisting of OH, C₁-C₃ hydroxyalkyl, COOH, PO(OH)₂ and S(O)₂OH.

32. (Original) The MRI contrast agent according to claim 31, wherein A is N or P(O); E¹, E² and E³ are chelating arms each independently having the formula:



wherein k is 2-3; R²¹ is independently selected from the group consisting of CH₃, CH₂COOH, and CH₂PO(OH)₂; and R²² is independently selected from the group consisting of CH₂COOH, and CH₂PO(OH)₂.

33. (Original) The MRI contrast agent according to claim 32, wherein A is N or P(O); k is 2-3; and E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂.

34. (Original) The MRI contrast agent according to claim 33, wherein A is N; E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂, and k is 2-3.

35-38. (Canceled)

39. (Original) An X-ray or CT contrast agent comprising a polypodal chelant according to claim 1, chelated with a heavy metal ion of atomic number 21-31, 39-50, 56-80, 82, 83 or 90.

40. (Canceled)

41. (Previously Presented) The X-ray or CT contrast agent according to claim 39, wherein said polypodal chelant is characterized by being tripodal.

42. (Previously Presented) The X-ray or CT contrast agent according to claim 41, wherein A of said tripodal chelant is a spacer selected from the group consisting of R¹-C, N, P, and P(O); R¹ is selected from the group consisting of H, C₁-C₆ alkyl, C₃-C₆ cycloalkyl, C₁-C₆ alkenyl, C₃-C₆ cycloalkyl, benzyl, and phenyl; E¹, E², and E³ are chelating arms each independently having the formula:



R²¹ and R²² are independently selected at each occurrence from the group consisting of H, C₁-C₁₀ alkyl substituted with 0-2 R²³, C₂-C₁₀ alkenyl substituted with 0-2 R²³, aryl substituted with 0-2 R²³, and C₇-C₁₆ alkaryl, wherein the aryl is substituted with 0-2

R^{23} , or R^{21} and R^{22} may be taken together to form a $=CH-R^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ;

R^{23} is selected from the group consisting of H, OH, C_1 - C_3 alkyl, C_1 - C_3 hydroxyalkyl,

$C(=O)R^{24}$, $C(=O)OR^{24}$, $C(=O)NR^{24}_2$, $PO(OR^{24})_2$ and $S(O)_2OR^{24}$; and

R^{24} is selected from the group consisting of H, C_1 - C_6 alkyl, C_3 - C_6 cycloalkyl, C_1 - C_6 fluoroalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkyl, benzyl and phenyl.

43. (Previously Presented) The X-ray or CT contrast agent according to claim 42, wherein A is a spacer selected from the group consisting of N and P(O); E^1 , E^2 , and E^3 are chelating arms each independently having the formula:



wherein R^{21} and R^{22} are independently selected from the group consisting of C_1 - C_{10} alkyl substituted with 0-2 R^{23} , and aryl substituted with 0-2 R^{23} , or R^{21} and R^{22} may be taken together to form a $=CH-R^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} , or heterocycle substituted by 0-5 R^{23} ; R^{23} is selected from the group consisting of OH, C_1 - C_3 hydroxyalkyl, $COOH$, $PO(OH)_2$ and $S(O)_2OH$.

44. (Original) The X-ray or CT contrast agent according to claim 43, wherein A is N or P(O); E^1 , E^2 and E^3 are chelating arms each independently having the formula:



wherein k is 2-3; R^{21} is independently selected from the group consisting of CH_3 , CH_2COOH , and $CH_2PO(OH)_2$; and R^{22} is independently selected from the group consisting of CH_2COOH , and $CH_2PO(OH)_2$.

45. (Original) The X-ray or CT contrast agent according to claim 44, wherein A is N or P(O); k is 2-3; and E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂.
46. (Original) The X-ray or CT contrast agent according to claim 45, wherein A is N; E¹, E² and E³ are (CH₂)_k-NHCOCH₂N(CH₂COOH)₂, and k is 2-3.
- 47-65. (Canceled)
66. (Original) A radiopharmaceutical composition for treating pathological processes involving angiogenic neovasculature in a patient in need thereof comprising a therapeutically effective amount of the radiopharmaceutical compound of claim 15 and a pharmaceutically acceptable carrier.
67. (Original) The composition of claim 66, wherein said radiopharmaceutical compound comprises a beta, alpha or Auger electron-emitting isotope.
68. (Original) A method for treating pathological processes involving angiogenic neovasculature in a patient in need thereof comprising administering to said patient a therapeutically effective amount of the radiopharmaceutical composition of claim 66.
69. (Original) A composition for radioactive imaging comprising an effective amount of the radiopharmaceutical compound of claim 15 and a pharmaceutically acceptable carrier.

70. (Original) A method for radioactive imaging comprising administering to a patient to be imaged sufficiently in advance thereto an effective amount of the radioactive imaging composition of claim 69.
71. (Original) A method according to claim 70, wherein said imaging method is gamma scintigraphy or positron-emission tomography.
72. (Original) A composition for X-ray imaging comprising an effective amount of the contrast agent of claim 39 and a pharmaceutically acceptable carrier.
73. (Original) A method for X-ray imaging comprising administering to a patient to be imaged sufficiently in advance thereof an effective amount of the X-ray imaging composition of claim 72.
74. (Original) A method according to claim 73, wherein said X-ray imaging method is CT imaging.
75. (Original) A composition for magnetic resonance imaging comprising an effective amount of the contrast agent of claim 27 and a pharmaceutically acceptable carrier.

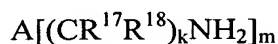
76. (Original) A method for magnetic resonance imaging comprising administering to a patient to be imaged sufficiently in advance thereof an effective amount of the magnetic resonance imaging composition of claim 75.
77. (Original) A pharmaceutical composition for treating heavy metal toxicity in a patient in need thereof, comprising a therapeutically effective amount of the polypodal chelant of claim 1 and a pharmaceutically acceptable carrier.
78. (Original) A method for treating heavy metal toxicity in a patient in need thereof, comprising administering to said patient a therapeutically effective amount of the pharmaceutical composition of claim 77.
79. (Original) A radiopharmaceutical treatment kit comprising: a sterile, non-pyrogenic formulation comprising a radiopharmaceutical composition according to claim 66, a pH 3-9 buffering agent and optionally one or more additives selected from the group consisting of ancillary ligands, reducing agents, transfer ligands, buffers, lyophilization aids, stabilization aids, solubilization aids, bacteriostats and equipment for administering said composition.
80. (Original) The treatment kit of claim 79, wherein said formulation is in the form of a sterile solution or lyophilized solid.

81. (Original) A diagnostic kit comprising: a sterile, non-pyrogenic formulation comprising a radiopharmaceutical composition according to claim 66, a pH 3-9 buffering agent and optionally one or more additives selected from the group consisting of ancillary ligands, reducing agents, transfer ligands, buffers, lyophilization aids, stabilization aids, solubilization aids, bacteriostats and equipment for administering said composition.
82. (Original) The diagnostic kit of claim 81, wherein said formulation is in the form of a sterile solution or lyophilized solid.
83. (Original) A diagnostic kit comprising: a sterile, non-pyrogenic formulation comprising an X-ray imaging composition according to claim 72, a pH 3-9 buffering agent and optionally one or more additives selected from the group consisting of ancillary ligands, reducing agents, transfer ligands, buffers, lyophilization aids, stabilization aids, solubilization aids, bacteriostats and equipment for administering said composition.
84. (Original) The diagnostic kit of claim 83, wherein said formulation is in the form of a sterile solution or lyophilized solid.
85. (Original) A diagnostic kit comprising: a sterile, non-pyrogenic formulation comprising a magnetic resonance imaging composition according to claim 75, a pH 3-9 buffering agent and optionally one or more additives selected from the group consisting of

ancillary ligands, reducing agents, transfer ligands, buffers, lyophilization aids, stabilization aids, solubilization aids, bacteriostats and equipment for administering said composition.

86. (Original) The diagnostic kit of claim 85, wherein said formulation is in the form of a sterile solution or lyophilized solid.

87. (Currently Amended) A compound having the formula:



wherein A is a spacer selected from the group consisting of R^1 -C, R^1 -Si, R^1 -Ge, N, and P(O)

wherein k is an integer selected from 0 to 3;

m is 3;

R^1 is independently selected at each occurrence from the group consisting of H, C_1 - C_6 alkyl,

C_3 - C_6 cycloalkyl, C_1 - C_6 fluoroalkyl, C_1 - C_6 alkenyl, C_3 - C_6 cycloalkenyl, C_1 - C_6

fluoroalkenyl, benzyl, fluorobenzyl, phenyl and fluorophenyl;

R^{17} and R^{18} are independently selected from the group consisting of H, C_1 - C_{10} alkyl

substituted with 0-5 R^{23} , C_1 - C_{10} fluoroalkyl substituted with 0-5 R^{23} , C_2 - C_{10} alkenyl

substituted with 0-5 R^{23} , C_2 - C_{10} fluoroalkenyl substituted with 0-5 R^{23} , aryl

substituted with 0-5 R^{23} , C_7 - C_{16} alkaryl wherein the aryl is substituted with 0-5 R^{23} ,

and fluoroaryl substituted with 0-5 R^{23} ; or R^{17} and R^{18} may be taken together to form

a C_3 - C_{10} cycloalkyl or C_3 - C_{10} cycloalkenyl optionally interrupted with C(O)NH, NH,

NHC(O), NHC(O)NH, NHC(S)NH, O, S, S(O), S(O)₂, P(O)(OR²⁴), P(O)(OR²⁴)O or

$P(O)(NHR^{24})O$, or to form a $=CH-R^{22a}$ group, wherein R^{22a} is aryl substituted with 0-5 R^{23} or heterocycle substituted by 0-5 R^{23} ;

R^{23} is selected from the group consisting of H, OH, C_1-C_3 alkyl, C_1-C_3 hydroxyalkyl,

$C(=O)R^{24}$, $C(=O)OR^{24}$, $C(=O)NR^{24}_2$, $PO(OR^{24})_2$ and $S(O)_2OR^{24}$; and

R^{24} is selected from the group consisting of H, C_1-C_6 alkyl, C_3-C_6 cycloalkyl, C_1-C_6

fluoroalkyl, C_1-C_6 alkenyl, C_3-C_6 cycloalkyl, C_1-C_6 fluoroalkenyl, benzyl,

fluorobenzyl, phenyl, and fluorophenyl,

with the proviso that when A is H-Si or N, k is other than 0, and when A is CH_3-C and k is 1

and R_{17} is H, R_{18} is other than H.

88-110. (Canceled)